AMENDMENTS TO THE CLAIMS

1. (Cancelled)

2. (Currently Amended) The method of claim [[1]]11, wherein the coexisting application includes at least one of analog voice band , integrated services digital network, Centrex, and digital private branch exchange.

3. (Currently Amended) The method of claim [[1]]11, further comprising the steps of:

detecting a symbol rate change; and

adjusting a frequency band for communication in response to the symbol rate change.

4. (Currently Amended) The method of claim [[1]]11, wherein the baud rate ranges from approximately 62.5 kHz to 13.333 MHz.

5. (Currently Amended) The method of claim [[1]]11, further comprising the step of: implementing a QAM 256 modulation scheme for increasing data rate.

6. (Currently Amended) The method of claim [[1]]11, further comprising the step of: implementing a decision feedback equalizer for improved filtering.

7. (Currently Amended) The method of claim [[1]]11, further comprising the step of: providing forward error correction for recovering corrupted data.

8. (Currently Amended) The method of claim [[1]]11, further comprising the step of: delivering approximately 100 Mbps at a distance up to 2750 feet.

9. (Currently Amended) The method of claim [[1]]11, further comprising the step of: delivering approximately 20 Mbps at a distance up to 7500 feet.

10. (Currently Amended) The method of claim [[1]]11, further comprising the step of: delivering approximately 2.9 Mbps at a distance up to 21,000 feet.

11. (Currently Amended) ~~The method of claim 1,~~A method for communicating information packets between at least a first modem and a second modem via a communication line, the method comprising the steps of:

setting a fixed lower corner frequency to enable communications to occur on a portion of a communication spectrum not used by another coexisting application to enable line sharing functionality;

determining a center frequency based on the fixed lower corner frequency and a baud rate, wherein the center frequency is determined by f_c = (baud rate + excess bandwidth)/2 + fixed lower corner frequency[[..]]; and

operating a signal in a lower end of the communication spectrum wherein signal loss and crosstalk are reduced.

12. (Cancelled)

13. (Currently Amended) The system of claim [[12]]22, wherein the coexisting application includes at least one of analog voice band , integrated services digital network, Centrex, and digital private branch exchange.

14. (Currently Amended) The system of claim [[12]]22, further comprising:

a detecting means for detecting a symbol rate change; and

an adjusting means for adjusting a frequency band for communication in response to the symbol rate change.

15. (Currently Amended) The system of claim [[12]]22, wherein the baud rate ranges from approximately 62.5 kHz to 13.333 MHz.

16. (Currently Amended) The system of claim [[12]]22, further comprising a QAM 256 modulation scheme for increasing data rate.

17. (Currently Amended) The system of claim [[12]]22, further comprising a decision feedback equalizer for improved filtering.

18. (Currently Amended) The system of claim [[12]]22, further comprising a forward error corrector for recovering corrupted data.

19. (Currently Amended) The system of claim [[12]]22, wherein the system delivers approximately 100 Mbps at a distance up to 2750 feet.

20. (Currently Amended) The system of claim [[12]]22, wherein the system delivers approximately 20 Mbps at a distance up to 7500 feet.

21. (Currently Amended) The system of claim [[12]]22, wherein the system delivers approximately 2.9 Mbps at a distance up to 21,000 feet.

22. (Currently Amended) ~~The system of claim 12,~~A system for communicating information packets between at least a first modem and a second modem via a communication line, the system comprising:

a fixed corner frequency means for setting a fixed lower comer frequency to enable communications to occur on a portion of a communication spectrum not used by another coexisting application to enable line sharing functionality;

a center frequency means for determining a center frequency based on the fixed lower corner frequency and a baud rate, wherein the center frequency is determined by f_c = (baud rate + excess bandwidth)/2 + fixed lower corner frequency[[.]]; and

an operating means for operating a signal in a lower end of the communication spectrum wherein signal loss and crosstalk are reduced.

23. (Currently Amended) A transmitter for communicating information packets via a communication line, the transmitter comprising:

an encoder for encoding a digital data stream into a waveform; and

a transmitting means for transmitting the waveform comprising information packets via a two-wire line, wherein the two-wire line is a telephone subscriber line, [[;]]

the transmitting means comprising:

means for setting ~~wherein the transmitter operates at~~ a fixed lower corner frequency to enable communications to occur on a portion of a communication spectrum not used by another coexisting application to enable line sharing functionality ~~wherein signal loss and crosstalk are reduced~~[[.]] ;

means for determining a center frequency f_c as the fixed lower corner frequency plus half the sum of a baud rate and an excess bandwidth; and

means for operating a signal in a lower end of the communication spectrum wherein signal loss and crosstalk are reduced.

24. (Previously Presented) The transmitter of claim 23, wherein the coexisting application includes at least one of analog voice band , integrated services digital network, Centrex, and digital private branch exchange.

25. (Original) The transmitter of claim 23, further comprising a scrambler for scrambling a plurality of input bits to whiten the spectrum of the signal being transmitted.

26. (Original) The transmitter of claim 25, wherein a tap polynomial of the scrambler is represented by x(n)=m(n)+x(n-18)+x(n-23).

27. (Original) The transmitter of claim 23, further comprising a FEC encoder for adding coding gain by adding a plurality of bits for error correction.

28. (Original) The transmitter of claim 23, further comprising a QAM data encoder for performing a differential phase encoding.

29. (Previously Presented) The transmitter of claim 23, further comprising a Tomlinson pre-coder for pre-emphasizing the signal to counteract the communication line.

30. (Original) The transmitter of claim 23, further comprising at least one pulse-shaping filter comprising a low-pass finite impulse response filter with a square-root raised cosine response to interpolate a waveform to a predetermined number of samples per symbol.

31. (Original) The transmitter of claim 23, further comprising at least one cascaded integrator comb interpolator for interpolating a frequency signal by a predetermined amount.

32. (Original) The transmitter of claim 23, further comprising an agile mixer for receiving a base-band in-phase signal and quadrature-phase signal and complex mixing the signals to transmit at a variable carrier frequency.

33. (Currently Amended) A receiver for receiving information packets via a communication line, the receiver comprising:

a decoding means for decoding a sampled analog signal into a series of symbols; and

a receiving means for receiving the sampled analog signal via a two-wire line, wherein the two-wire line is a telephone subscriber line;

<u>the receiving means comprising:</u>

<u>means for setting</u> ~~wherein the receiver operates at~~ a fixed lower corner frequency to enable communications to occur on a portion of a communication spectrum not used by another coexisting application to enable line sharing functionality ~~wherein signal loss and crosstalk are reduced~~[[.]]<u>;</u>

means for determining a center frequency f_c as the fixed lower corner frequency plus half the sum of a baud rate and an excess bandwidth; and

means for operating a signal in a lower end of the communication spectrum wherein signal loss and crosstalk are reduced.

34. (Previously Presented) The receiver of claim 33, wherein the coexisting application includes at least one of analog voice band , integrated services digital network, Centrex, and digital private branch exchange.

35. (Original) The receiver of claim 33, further comprising an agile mixer for receiving a pass-band signal and complex mixing the pass-band signal to an in-phase base-band and a quadrature-phase base-band using a variable carrier frequency.

36. (Original) The receiver of claim 33, further comprising at least one cascaded integrator comb decimator for decimating an input signal by a predetermined amount.

37. (Original) The receiver of claim 33, wherein the receiver comprises at least one pulse-shaping filter comprising a low-pass finite impulse response filter with a square-root raised cosine response to interpolate a waveform to a predetermined number of samples per symbol.

38. (Original) The receiver of claim 33, further comprising a descrambler for recovering original data, wherein a tap polynomial of the descrambler is represented by: x(n)=m(n)+m(n-18)+m(n-23).

39. (Cancelled)

40. (Previously Presented) The method of claim 42, wherein each CPE modem of the plurality of CPE modems communicates via a single loop.

41. (Previously Presented) The method of claim 42, wherein each CPE modem of the plurality of CPE modems communicates via individual connecting loops.

42. (Previously Presented) A method for communicating information packets between a first CO modem and a plurality of CPE modems, the method comprising the steps of:

observing a training process for the plurality of CPE modems;

assigning a CPE selector identifier to each CPE modem based on the training process; and

responding to a burst directed to a CPE selector identifier;

buffering the information packets received from a network into at least one buffer per CPE modem;

monitoring the step of buffering the information packets; and

varying a ratio of packets communicated from each buffer associated with the plurality of CPE modems as a function of the step of monitoring.

43. (Previously Presented) The method of claim 42, further comprising the step of:

communicating control information from the first CO modem to each plurality of CPE modems, wherein the control information comprises transmission data to avoid collisions with other CPE modems.

44. (Original) The method of claim 43, wherein the control information is communicated via an addressing scheme.

45. (Original) The method of claim 43, wherein the control information is communicated via a broadcast scheme to the plurality of CPE modems, wherein each CPE modem responds individually.

46. (Original) A method for communication information packets from a CO modem, the method comprising the steps of:

observing a training process for a plurality of CPE modems;

assigning a CPE selector identifier to each CPE modem;

generating a polling sequence addressed to each CPE modem; and

forwarding information packets in a burst to the plurality of CPE modems, via the CPE selector identifier for each CPE modem.

47. (Original) The method of claim 46, further comprising the step of:

maintaining a table of trained speeds for the plurality of CPE modems for selecting a speed for forwarding the burst addressed to a CPE modem.

48. (Original) The method of claim 46, wherein the CPE selector identifiers are incorporated into a bridge table to create a logical mapping of MAC addresses to each CPE modem.

49. (Original) The method of claim 46, further comprising the step of:

implementing a plurality of CPE selector interfaces to forward the information packets in the burst to each CPE modem.

50. (Original) The method of claim 46, wherein the polling sequences are adaptive polling sequences for minimizing polling directed to one or more inactive CPE modems.

51. (Original) A method for receiving information packets by a plurality of CPE modems, the method comprising the steps of:

training the plurality of CPE modems;

learning a CPE selector identifier for each CPE modem;

responding to a burst directed to a CPE selector identifier, associated with a CPE modem within the plurality of CPE modems; and

generating a reply burst to each polling sequence addressed to the CPE selector identifier.

52. (Original) The method of claim 51, wherein each CPE modem of the plurality of CPE modems communicates via a single loop.

53. (Original) The method of claim 51, wherein each CPE modem of the plurality of CPE modems communicates via individual connecting loops.

54. (Original) The method of claim 51, wherein the plurality of CPE modems train to a substantially similar set of speeds.

55. (Original) The method of claim 51, wherein the plurality of CPE modems respond to a substantially similar set of speeds.

56. (Original) The method of claim 51, wherein the step of responding further comprising the step of:

observing a frame header on the information packet to determine processing data.

57. (Original) The method of claim 51, further comprising the step of:

receiving a broadcast message for enabling the plurality of CPE modems to process the broadcast message from a single packet in the burst.

58. (Original) The method of claim 57, wherein the burst comprises control parameters.

59. (Original) The method of claim 58, wherein the control parameters comprise sequencing data associated with generating reply data.

60. (Cancelled)

61. (Previously Presented) The system of claim 63, wherein each CPE modem of the plurality of CPE modems communicates via a single loop.

62. (Previously Presented) The system of claim 63, wherein each CPE modem of the plurality of CPE modems communicates via individual connecting loops.

63. (Previously Presented) A system for communicating information packets between a first CO modem and a plurality of CPE modems, the system comprising:

an observing means for observing a training process for the plurality of CPE modems;

an assigning means for assigning a CPE selector identifier to each CPE modem based on the training process; and

a responding means for responding to a burst directed to a CPE selector identifier;

a buffering means for buffering the information packets received from a network into at least one buffer per CPE modem;

a monitoring means for monitoring the step of buffering the information packets; and

a varying means for varying a ratio of packets communicated from each buffer associated with the plurality of CPE modems as a function of the step of monitoring.

64. (Previously Presented) The system of claim 63, further comprising:

a communicating means for communicating control information from the first CO modem to each plurality of CPE modems, wherein the control information comprises transmission data to avoid collisions with other CPE modems.

65. (Original) The system of claim 64, wherein the control information is communicated via an addressing scheme.

66. (Original) The system of claim 64, wherein the control information is communicated via a broadcast scheme to the plurality of CPE modems, wherein each CPE modem responds individually.